

LSC Meeting Minutes, December 16th, 2015, 11:30 am

Present:

Ian Sharp – CSD, Chair
Greta Toncheva - LSO
Robert Fairchild - Deputy LSO
Eddie Ciprazo - UCB LSO
Xianglei Mao - EETD
Martin Neitzel - DSC CSD
Daniel Slaughter – ALS & CSD
Quang Le – EHS
Michael Carr – BSO
Vasileia Zormpa – ETA

Note: The last LSC meeting was held on July 30, 2015, the minutes were distributed via email, no comments were received and the minutes were posted on the laser safety program webpage.

1. Welcome to Vasileia Zormpa as a committee member

2. Chapter 16 – round table discussion; comments, suggestions, corrections – Greta Toncheva

- New correction factors in OD calculations: This may effect some of our laser users using wavelengths in near IR – 1064nm to 1150nm – slight increase OD 5.3 vs OD 5.48
- Two softwares – EasyHazLSO v.1.07 (obtained from Kentek) and LHAZ v.6.0 (provided by US Army to all DOE labs), validated by the LSO
- All ODs will be recalculated during the renewal of the activities
- The IHA controls were designed with the new ANSI revision in mind, so there will be no changes to the controls in WPC
- A question was raised about when “Danger” versus “Warning” would be used on entryway warning signs. The current guidance states that “Danger” should only be used for a subset of Class 4 lasers, with the example given as “multi-kW” systems. However, it was pointed out that this guidance does not effectively address hazards of pulsed laser systems, where a time averaged power is not sufficient to specify the hazard. The committee discussed this issue and multiple options were suggested, including making all Class 4 lasers have “Danger” labels, leaving it to the discretion of the LSO, or staying with the present guidance. The LSC agreed that the appropriate policy is that the choice for use of “Danger” versus “Warning” will be made at the discretion of the LSO in consultation with the Activity Lead.

3. A formal committee agreement with the program Goes in effect Jan. 2016

- LSO will present changes to DSC meeting in January and on division safety meetings if invited
- Examples of warning entryway signs are already posted on the web page, custom signs have to be prepared and approved by the LSO
- TABL announcement with headline “Laser entryway postings are going to change”

- Emails to Activity Leads with the main program changes
- **The Laser Safety Committee voted unanimously to accept the revised program with no changes.**

4. Update on WPC

- Activities:
 - Risk 3 laser activities in WPC – total of 77;
 - Out of them: 2 in collaboration, 4 in developing stage, 4 on hold
 - First 4 due for renewal in January in CSD
- Lasers in active use – 390
- Laser users authorized through WPC – 297
- Bugs in WPC:
 - On the last meeting Martin pointed out a bug that has been reported to WPC developers – if an activity goes into collaboration and then a new hazard is added, then the LSO is not flagged. WPC liaisons have been helping, but these issues have fallen through the cracks on occasion – this has not been fixed yet, some liaisons are aware and manually add the LSO or do not approve without LSO evaluation
 - Be aware about the laser safety training – if the worker does not accept the activity, the training shows as “Extra” even though it is required and training expiration may go unnoticed – this is meant to be that way, so the activity lead has to make sure that everyone working with Class 3b and 4 lasers has current EHS302. LSO has a tool to check for waived EHS302 – 26 people showed with waived or “extra” training when they all are on laser activity. Most of them were in MSD and a big part of the cases were corrected.

5. Recent Incidents:

Incident at Sandia/ LANL

Subject/Title: Unexpected Personal Contact with Reflected Laser Beam
Lab/Site/Org: Sandia National Laboratories

Occurrence Description: On Thursday November 19, 2015, a Los Alamos National Laboratory (LANL) employee was working at the Sandia lab (Center for Integrated Nanotechnologies)

- The laser (Class 4, pulsed, 800 nm) is configured to split the beam into two work areas
- The laser output beam was being projected to both experimental work areas, although only one experimental area was actively being used. The second laser beam directed to the second work area was blocked by an optically opaque material.
- The operator wearing goggles with OD8 traced the associated beam path with an infrared laser viewing card (per procedures). To record two micrometer settings for the measurement, the operator stepped up onto small step ladder to get a better view of the micrometers inside the laser enclosure.

- The micrometer markings were still difficult to read from this vantage point, the operator momentarily lifted his laser safety eye-wear to increase visibility, and he noticed a flash of light
- The operator quickly replaced the laser eye-wear and then, using an infrared viewer, located a stray laser beam being reflected from the inactive experiment on the opposite end of the optical table.

The **beam was being reflected off of the opaque piece of laser enclosure material**. The laser enclosure material, **not normally used** for application as a temporary beam stop, was positioned at an **inclined angle** slightly off-vertical and consequently reflecting the beam at an upward angle toward the primary work area where the operator had been standing on the step ladder. The enclosure material had been placed there by **another LANL operator** who had been conducting experiments on the adjacent work area several days before. Once the stray beam was identified, a card was placed in front of the reflected beam to shield the stray reflection.

- Reflective material for enclosure
- Positioned at inclined angle
- Two experiments on the same optical table
- Poor communications
- Lifting the protective eyewear for a better visibility

The operator did not think he had sustained any injury and continued working. Later that day, however, he noticed a blurry spot in the vision of his left eye. He notified his supervisor on Friday morning, November 20, 2015, and was taken by CINT management to Sandia National Laboratories (SNL) medical facility for evaluation. SNL Medical did not find any abnormalities, but referred the operator to a local ophthalmologist for further evaluation. Further evaluations by the ophthalmologist on November 21 and November 23 identified a small spot of inflammation near the fovea on the retina in his left eye. The ophthalmologist stated that this spot would most likely heal on its own and that the blurry spot on the operator's vision would go away. A follow-up visit was scheduled. The employee was released back to work without restrictions.

Based on the investigation and the presence of a spot of inflammation on the operator's retina, it is concluded that the operator was exposed in excess of the associated Maximum Permissible Exposure (MPE) limit.

Immediate Action(s): When the laser operator notified the laboratory owner about the incident (on Friday November 20th), **the laboratory owner installed a beam block in the appropriate optical path, preventing the beam from propagating to the adjacent experiment**. LANL management was immediately notified of the incident. Since the incident, laser operations in other CINT laboratories have been inspected to ensure the use of properly positioned, non-reflecting beam blocks. All authorized laser operators in CINT Facilities at SNL and LANL are participating in a lesson-learned review of this incident. Experimental configurations in which multiple experiments share a common laser source are being re-examined in order to determine if additional engineered controls can be used for better overall configuration ORPS

6. Discussion:

- Based on a discussion of the recent incident at Sandia/LANL, an agenda item for the next LSC meeting is to discuss laser beam block policies and ways that users can find

information about purchasing beam blocks (potentially with links on the LBNL Laser Safety website).

- Another agenda item for the next meeting will be on policies, procedures, and best practices for working with supercontinuum lasers